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Patent Claims

1. Method for producing sorbicillactone A or derivatives thereof, comprising the steps of:

a) culturing a fungus of the genus *Penicillium* at 20-25 °C in a suitable growth medium at a salt concentration of 2-5 % until the formation of a compact surface mycelium,

b) Increasing the temperature to 28-35°C and further incubation for 5-10 days,

c) Separating the culture broth from the mycelium, and

d) Extracting of sorbicillactone A and derivatives thereof from the culture medium, and optionally,

e) Underlaying of the mycelium with fresh medium with a reduced salt concentration of 0,5-1,5 % and incubation at 28-35°C for 3-8 days,

f) Repeating of step c) and d), and optionally,

g) Repeating of steps e) to f), and

h) Extracting of sorbicillactone A and derivatives thereof from the culture medium and/or the mycelia.

2. Method according to claim 1, wherein the fungus is *Penicillium chrysogenum*, in particular the strain KIP 3201.

3. Method according to any of the preceding claims, wherein different additives can be added to the suitable growth media, such as, for example, pyruvate, glutamate, proline, acetate, sorbicilline or other biosynthetic precursors of sorbicillactone A.

4. Method according to any of the preceding claims, wherein the production takes place in a flat bed method.

5. Method according to any of the preceding claims, wherein the inoculum is a solid-state-bound form of the fungus.

6. Method according to claim 5, wherein the solid states to which the fungus is bound are floatable solid states, e.g. grains or styrofoam globes.

7. Method according to any of the preceding claims, wherein a carrier device for a stabilisation of the surface mycelium is introduced into the culture vessel.

8. Method according to claim 7, wherein the carrier device is a mesh.

9. Method according to any of the preceding claims, wherein sorbicillactone A or derivatives thereof are extracted from the fungal mycelium that is separated from the culture medium by the addition with ethyl acetate.

10. Method according to any of claims 1-8, wherein sorbicillactone A or derivatives thereof are immediately bound from the culture medium to a solid exchanger, and are purified further from this bound form.

11. Method according to claim 10, wherein the solid exchanger is the exchange resin Amberlite XAD-16.

12. Method according to claim 10 or 11, wherein the solid exchanger as loaded is filtered off from the medium, and sorbicillactone A or derivatives thereof are eluted with organic solvents.

13. Method according to claim 12, wherein the organic solvents are methanol, ethanol, ethyl acetate, heptane or acetonitrile.

14. Method according to one of claims 10-13, wherein sorbicillactone A or derivatives thereof are acid-extracted from the crude extract with organic solvents.

15. Method according to claim 14, wherein the crude extract is brought to a pH of 2 with phosphoric acid, and is subsequently extracted with ethyl acetate.

16. Method according to any of the preceding claims, wherein a purification of the extracts occurs by means of FCPC (Fast Centrifugal Partitioning Chromatography).

17. Method according to claim 16, wherein a mixture of solvents from heptane, ethyl acetate, methanol, and water with an addition of 1 ml/L of concentrated phosphoric acid at a flow of 6-7 mL/min, and number of revolutions of 1200 revolutions per min, and wherein the upper is used as stationary phase, is used.

18. Method according to any of the preceding claims, wherein a purification of the extract occurs by gel chromatography on Sephadex LH-20 using an organic solvent.

19. Method according to claim 18, wherein sorbicillactone A is eluated with methanol.

20. Method for producing of sorbicillactone-A-methyl ester, comprising the steps of:
a) Producing of sorbicillactone A as described in claims 1-19,
b) Treating of sorbicillactone A dissolved in methanol with concentrated sulphuric acid,
c) Stirring at room temperature for 6 h,
d) Adding of water,
e) Extracting with ethyl acetate,
f) Evaporating the organic phases in vacuo, and
g) Purifying of the residual by preparative HPLC.

21. Method for producing a pharmaceutical, comprising the steps of:

a) Producing von sorbicillactone A or derivatives thereof as described in the claims 1-19, and

b) Formulating of a pharmaceutical composition using pharmaceutically acceptable auxiliary agents and additives.

22. Method for producing a pharmaceutical according to claim 21, characterized in that sorbicillactone A or derivatives thereof are present in an amount, so that a range of concentrations between 0.3 and 30 μg/ml is present upon the treatment in vivo.

23. Use of sorbicillactone A or derivatives thereof as triggering agent of apoptosis in diseased cells, in particular tumour cells.

24. Use of sorbicillactone A or derivatives thereof in the treatment of leukaemia.

25. Use of sorbicillactone A or derivatives thereof in the treatment neurodegenerative diseases.

26. Use of sorbicillactone A or derivatives thereof in the treatment of bacterial and fungal infections.

27. Fungal strain of the genus *Penicillium chrysogenum* KIP 3201 with the deposit number DSM 16137.